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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/614,146 | 07/07/2003 | Peter J. Cate | 61134B | 7714 |

109 7590 11/10/2005
THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION
P. O. BOX 1967
MIDLAND, MI 48641-1967

EXAMINER

YAO, SAMCHUAN CUA

ART UNIT PAPER NUMBER

1733

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/614,146 | Applicant(s) CATE ET AL. | |
| | Examiner Sam Chuan C. Yao | Art Unit 1733 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10,12 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10,12 and 15-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This claim is indefinite, because it is unclear how this claim further limit claim 1. This claim appears to be redundant since the complementary surfaces of the members in claim 1 are already *"unprimed and untreated"*.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4-5, 7-10, 12, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carpenter (US 5,154,462) in view of Pocius (US 5,686,544) and Sonnenschein et al (US 2002/0058764 A1).

Carpenter, drawn to a process of making an adhesively bonded auto cross member bumper beam, discloses substantially the method recited in claims 1, 4-5, 7-10 and 12 (abstract; col. 3 line 38 to col. 4 line 67; figures 3-5). The process of Carpenter differs from these claims in that, Carpenter is silent on whether a priming agent is

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applied onto a fiber-reinforced plastic surface prior to being adhesively bonded to a reinforcing member. Moreover, Carpenter does not teach the recited polymerizable organoborane /amine complex adhesive composition recited in claim 1 or 12.

However, it would have been obvious in the art to use an organoborane amine complex composition taught by Sonnenschein et al for adhesively bonding a fiber-reinforced plastic to a reinforcing member without priming the plastic and the member in a process taught by Carpenter, because: a) it is well known in the art to use a stable organoborane amine complex to adhesively bond various substrates such as “plastic to metal”, “(automotive) glass-metal bonding”, etc., particularly those with “low surface energy polymers” as exemplified in a disclosure of Pocius (col. 1 lines 10-20 & 52-64; col. 3 lines 17-23); and, b) Sonnenschein et al teaches a polymerizable adhesive composition comprising a) an amine organoborane complex, b) *“one or more monomers, oligomers or polymers having olefinic unsaturation”*, and c) *“... a compound which causes the complex to dissociate ...”*, wherein the composition is useful for bonding low surface energy substrates such as automobile components without the need for **using a primer or application of surface treatment**, and further wherein the composition is *“safe to handle, not pyrophoric, ... stable at, or near, ambient temperature and therefore will not initiate polymerization at, or near ambient temperature in the absence of an initiator that causes the complex to disassociate ...”* (emphasis added; abstract; numbered paragraph 2-4, 9, 12-13). Note: while Carpenter is silent on the characteristics of a fiberglass reinforced plastic (FRP), it is reasonably expected that the FRP is

reasonably expected to have a relatively a low surface energy as such is a typical characteristic of conventional plastic material. In any event, it would have been obvious in the art to use an FRP where the surface of the FRP has a low surface energy as such is notoriously well known/conventional in the art. Moreover, Sonnenschein et al discloses that “[l]ow surface energy olefins such as polyethylene, polypropylene, polytetrafluoroethylene have a variety of attractive properties in variety of uses ... automobiles ...” (emphasis added; numbered paragraph 3).

With respect to claim 15-16, see numbered paragraph 20 of the Sonnenschein et al patent.

With respect to claims 17-18, see numbered paragraph 15 of the Sonnenschein et al patent.

With respect to claim 19, see numbered paragraph 20 of the Sonnenschein et al patent.

5. Claims 2, 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references set forth in numbered paragraph 4 as applied to claim 1 above, and further in view of the Admitted Prior Art (APA).

With respect to claims 2-3 and 6, while Carpenter teaches using a fiber reinforced plastic, Carpenter is silent on the type of plastic material which is used to form a fiber reinforced plastic. However, it would have been obvious in the art to form a bumper system comprising a glass filled polypropylene as such is conventional in the art as exemplified in the teachings of APA (numbered paragraphs 7-10).

Response to Arguments

6. Applicant's arguments filed on 10-11-05 have been fully considered but they are not persuasive.

On page 7 to page 8 line 9, Counsel argued that Carpenter teaches using an epoxy or polyurethane for adhesively bonding an FRP and a metallic member. Accordingly, one in the art would not have been motivated to use a low surface energy plastic since: a) it would be difficult to such a plastic using an epoxy or polyurethane adhesive without using an expensive surface treatment or priming operation; and b) matrix resins for a fiber-reinforced material which has a high surface energy are known in the art. First of all, while it may be desirable to prime or surface treat low surface energy materials such as a polyolefin when a polyurethane or epoxy adhesive is used for bonding polyolefin materials, such is not necessary as evidence from the following references: Ezawa et al (US4,975,313; abstract; example 1) or Katsura et al (US 4,310,578; col. 1 lines 35-48). Moreover, the phrase "*low energy surface*" is a subjective term. More importantly, Counsel's argument is not commensurate with independent claims 1 and 12. These claims are not limited to using a polyolefin material. In any event, the alleged problem of using a polyurethane or epoxy material as an adhesive for bonding a polyolefin based FRP member and metallic member is readily obviated by the application of an amine organoborane complex adhesive taught by Sonnenschein et al (numbered paragraphs 2-3, 9, 12-13,15, 20, 45-46). Note: Sonnenschein et al discloses that "[l]ow surface energy olefins such as polyethylene, polypropylene,

polytetrafluoroethylene have a variety of attractive properties in variety of uses ... automobiles ...” (emphasis added; numbered paragraph 3).

On page 8 full paragraph 1. Counsel argued that, there are a variety of adhesives for bonding a variety of substrates and there is no suggestion in the art to use the particular adhesive recited in the claims. While it is true that, there are a variety of adhesives for bonding a variety of substrates, Examiner strongly disagrees with Counsel assertion that there is no suggestion in the art to use the particular adhesive recited in the claims. As noted above, a) it is well known in the art to use a stable organoborane amine complex to adhesively bond various substrates such as “*plastic to metal*”, “*(automotive) glass-metal bonding*”, etc., particularly those with “*low surface energy polymers*” as exemplified in a disclosure of Pocius (col. 1 lines 10-20 & 52-64; col. 3 lines 17-23); and, b) Sonnenschein et al teaches a polymerizable adhesive composition comprising a) an amine organoborane complex, b) “*one or more monomers, oligomers or polymers having olefinic unsaturation*”, and c) “*... a compound which causes the complex to dissociate ...*”, wherein the composition is useful for bonding low surface energy substrates such as automobile components **without the need for using a primer or application of surface treatment**, and further wherein the composition is “*safe to handle, not pyrophoric, ... stable at, or near, ambient temperature* and therefore will not initiate polymerization at, or near ambient temperature in the absence of an initiator that causes the complex to disassociate ...” (emphasis added; abstract; numbered paragraph 2-4, 9, 12-13). The incentive for one in the art to use the amine

organoborane complex adhesive taught by Sonnenschein et al would have simply been to obviate the need to use an "expensive and costly" (Counsel's characterization) surface treatment or primer for bonding a polyolefin-based FRP at the same time take advantage of "a variety of attractive properties" (Sonnenschein et al; numbered paragraph 3) of using a polyolefin matrix.

On page 8 last paragraph to page 9 line 2, Counsel argued that, there is no suggestion in the art that an adhesive of an admitted prior art [taken to be Sonnenschein et al's adhesive] can be used for bonding automotive structures (i.e. "... *parts of front end carriers or bumpers together*"). Accordingly, the office action has failed to establish a reasonable expectation of success. Examiner strongly disagrees. As correctly noted by Counsel on page 6 last line to page 7 line 2, a first material which is used to make a bumper beam is a metallic material, while a second material can be a fiber-reinforced plastic (FRP). As further noted above, a stable organoborane amine complex adhesive is effective for bonding various substrates such as "plastic to metal", "*(automotive) glass-metal bonding*", etc., particularly those with "*low surface energy polymers*" as exemplified in a disclosure of Pocius (emphasis added) col. 1 lines 10-20 & 52-64; col. 3 lines 17-23). Moreover, Sonnenschein et al teaches a polymerizable adhesive composition comprising a) an amine organoborane complex, b) "*one or more monomers, oligomers or polymers having olefinic unsaturation*", and c) "... *a compound which causes the complex to dissociate ...*", wherein the composition is useful for bonding low surface energy substrates such as automobile components **without the need for using a primer**

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or application of surface treatment, and further wherein the composition is "safe to handle, not pyrophoric, ... stable at, or near, ambient temperature and therefore will not initiate polymerization at, or near ambient temperature in the absence of an initiator that causes the complex to disassociate ..." (emphasis added; abstract; numbered paragraph 2-4, 9, 12-13). Therefore, one in the art reading the collective teachings of the prior art references would have reasonably expected that, an amine organoborane complex adhesive suggested by Sonnenschein et al can successfully be used for bonding 1st metallic member and 2nd FRP member in order to form a bumper beam of Carpenter.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Chuan C. Yao whose telephone number is (571) 272-1224. The examiner can normally be reached on Monday-Friday with second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sam Chuan C. Yao
Primary Examiner
Art Unit 1733

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11-07-05